CLAIMS

1. A siliceous support for use in a catalyst for producing a lower aliphatic carboxylic acid ester by reacting a lower olefin with a lower aliphatic carboxylic acid in a gas phase, which has a silicon content of from 39.7 to 46.3% by mass

2. A siliceous support for use in a catalyst for producing a lower aliphatic carboxylic acid ester by reacting a lower olefin with a lower aliphatic carboxylic acid in a gas phase, which has a silicon content of from 85 to 99% by mass in terms of silicon dioxide.

3. A siliceous support for use in a catalyst for producing a lower aliphatic carboxylic acid ester by reacting a lower olefin with a lower aliphatic carboxylic acid in a gas phase, which has a crush strength of 30 N or more.

4. A catalyst for producing a lower aliphatic carboxylic acid ester by reacting a lower olefin with a lower aliphatic carboxylic acid in a gas phase, comprising a support as claimed in any one of claims 1 to 3.

5. A catalyst according to claim 4, which has a crush strength of 30 N or more.

6. A catalyst according to claim 4 or 5, wherein at least one member selected from the group consisting of heteropolyacids and salts thereof is supported on the support.

7. A catalyst according to claim 6, wherein the heteropolyacids are selected from the group consisting of tungstosilisic acid, tungstophosphoric acid, molybdophosphoric acid, molybdosilisic acid, vanadotungstosilisic acid, vanadotungstophosphoric acid, vanadomolybdophosphoric acid, vanadomolybdosilisic acid, molybdotungstosilisic acid and molybdotungstophosphoric acid.

8. A catalyst according to claim 6 or 7, wherein the heteropolyacid salts are selected from the group

consisting of lithium, sodium, magnesium, barium, copper, gold and gallium salts of tungstosilisic acid, tungstophosphoric acid, molybdophosphoric acid, molybdosilisic acid, vanadotungstosilisic acid, vanadotungstophosphoric acid, vanadomolybdophosphoric acid, vanadomolybdosilisic acid, molybdotungstosilisic acid and molybdotungstophosphoric acid.

9. A process for producing a catalyst as claimed in any one of claims 4 to 8, comprising loading at least one member selected from the group consisting of heteropolyacids and salts thereof on a support as claimed in any one of claims 1 to 3.

10. A process for producing a catalyst as claimed in any one of claims 4 to 8, comprising the following first and second steps:

First Step:

a step of loading at least one member selected from the group consisting of heteropolyacids and salts thereof on a support as claimed in any one of claims 1 to 3 to obtain a heteropolyacid and/or heteropolyacid salt-supported catalyst; and

Second Step:

A step of contacting the heteropolyacid and/or heteropolyacid salt-supported catalyst obtained in the first step with a gas containing at least one member selected from the group consisting of water, lower aliphatic carboxylic acids and lower aliphatic alcohols to obtain a catalyst for producing a lower aliphatic carboxylic acid ester.

11. A process according to claim 10, wherein the gas containing at least one member selected from the group consisting of water, lower aliphatic carboxylic acids and lower aliphatic alcohols is a mixed gas of water and acetic acid.

12. A process for producing a lower aliphatic carboxylic acid ester, comprising reacting a lower olefin with a lower aliphatic carboxylic acid in a gas phase in

the presence of a catalyst as claimed in any one of claims 4 to 8.

13. A process according to claim 12, wherein the reaction of a lower olefin with a lower aliphatic carboxylic acid is carried out in the presence of water.